Celebrating 5 years covering Lake Tahoe!

# Tahoe in Depth

*Protecting, Enjoying & Exploring the Lake Tahoe Basin*

Winter 2017 ■ Issue #12

*New wildlife research shows impact of climate change (below)*

## Changes in Tahoe wildlife

### *Tiny mammal facing higher summer temps*

**By Jim Sloan**
Tahoe In Depth

The pika is a small, furry mammal that lives in the harshest of places — in mountainous rocky areas where the snow is deep, the air is cold, and conditions are unforgiving.

The small-eared member of the rabbit family doesn't even hibernate, choosing instead to burrow into haypiles it builds beneath the deep snow and using its high metabolism and thick fur to survive.

But now the American pika is disappearing from vast stretches of the backcountry because of a new enemy: climate change.

A 6-inch mammal that can survive for months beneath massive snowpacks is disappearing in the face of increasingly hot summertime temperatures.

In a study published earlier this year in the journal *PLOS One*, researchers found that the pika has vanished from the rugged backcountry around Mount Pluto bounded by Lake Tahoe, state Route 89, and Highway 267.

It is the largest area of pika extinction

*Continued on page 20*

## Clarity Challenge

### *Report finds Tahoe meeting goals for reducing stormwater pollution*

### *Local governments, highway departments exceeded targets*

**By Tom Lotshaw**
Tahoe Regional Planning Agency

A new report by Nevada's Division of Environmental Protection and California's Regional Water Quality Control Board, Lahontan, finds that local governments and state highway departments at Tahoe are exceeding targets to reduce stormwater pollution and restore the lake's famous clarity.

According to the Lake Tahoe Total Maximum Daily Load Program 2017 Performance Report, Caltrans, Nevada Department of Transportation, City of South Lake Tahoe, and El Dorado, Placer, Douglas, and Washoe counties collectively reduced fine sediment stormwater pollution by 12 percent from 2004 baseline levels—exceeding a 10 percent target set for the first five years of the Lake Tahoe Total Maximum Daily Load (TMDL) Program.

Launched in 2011, the TMDL Program is a science-based plan to reduce fine sediment, nitrogen, and phosphorus pollution that harms Tahoe's clarity and restore lake clarity to 97.4 feet by 2076.

"Local governments and highway departments are doing tremendous work to reduce stormwater pollution that harms lake clarity," said Lahontan Water Board Executive Officer Patty Kouyoumdjian.

"Because of this work, more than 268,500 pounds of fine sediment

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## INSIDE THIS ISSUE:

TAHOE IN DEPTH
Protecting, Enjoying & Exploring the Lake Tahoe Basin

## 5 years of deep, clear coverage of Tahoe

It's hard to believe this issue of Tahoe In Depth marks FIVE years since the paper's inaugural publication. It's only through the generous support of our subscribers, underwriters, and readers that we've reached such an important milestone. Thank you!

Over these last five years, I'm proud to report Tahoe In Depth has won numerous awards for communications excellence and continues to be a valued news source. Given the challenges we face at Lake Tahoe, it's more important than ever to educate ourselves so we can protect this irreplaceable environment while supporting our local communities. Some of these challenges are covered in this issue of the paper — from a changing climate that's already affecting the special place we call home (see cover story on pikas) to wildfire and invasive species (see pages 5 and 8).

And speaking of wildfire, our neighbors in the California wine country are recovering from the most devastating fires in the state's history. We've listed a few community resources on page 5 if you'd like to support the recovery. At Tahoe, we live with the scarred reminder of the Angora Fire on our mountainside. Our heartfelt wishes for healing and rebuilding go out to all affected.

From everyone at Tahoe In Depth, think Tahoe snow and have a joyous holiday season!

— *Julie Regan*
executive editor

**Tahoe In Depth**

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TAHOE FUND
SHORELINEPLAN Enhancing Recreation & Protecting Lake Tahoe's 72 Miles of Shoreline
Tahoe City Public Utility District
KEEP TAHOE BLUE League to Save Lake Tahoe

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Photo: Marine Taxonomic Services



Photo: Will Richardson, Tahoe Institute for Natural Science



Image: City of South Lake Tahoe
*An artist's rendering of a new retail center at the "Y" in South Lake Tahoe.*



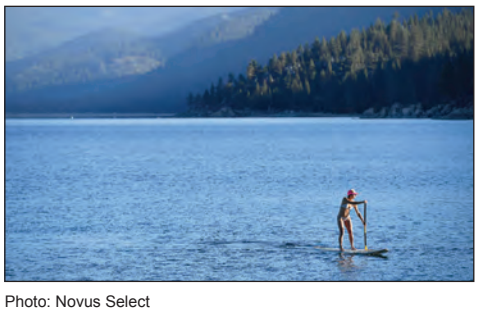


Photo: Novus Select



Photo: Tahoe Regional Planning Agency

# Caltrans reducing tree mortality hazards

*Agency will remove hundreds of dead, dying, and diseased trees from rights-of-way*

**By Tom Lotshaw**
Tahoe Regional Planning Agency

After five years of severe drought and spreading bark beetle infestations, California faces a tree mortality emergency with more than 102 million dead trees in the state.

While the greatest tree mortality is in the southern Sierra Nevada and foothills, tree mortality is a growing problem at Lake Tahoe. The number of dead trees has steadily increased each year for five years and the U.S. Forest Service estimates there are now more than 136,000 dead trees in the Tahoe Basin.

Caltrans is moving forward with a project that will help reduce the wildfire and other safety risks associated with dead trees, removing hundreds of dead and dying trees from its right-of-way along highways in the Tahoe Basin.

Caltrans hired professional foresters to identify dead, dying, and diseased trees that pose a hazard to life, property, and infrastructure along 67 miles of highways at Tahoe. The agency started removing the hazardous trees along state Routes 89 and 50 this year and will begin tree removals on state Routes 28 and 267 next August.

The agency will work to protect the public during tree removal operations with lower speed limits, on-site law enforcement, and traffic management plans to reduce travel delays.

Caltrans must get permission from property owners to remove trees from private property, extending up to 100 feet on both sides of the highway center line.

Hazardous trees in Caltrans' right-of-way, as well as hazardous trees outside the right-of-way that are tall enough to strike bike paths, bridges, or highways if they fall, will be removed at no cost to affected property owners.

Property owners who deny Caltrans permission to remove trees will assume liability for the damages or injuries that occur if a tree on their property marked with orange paint by Caltrans contractors falls on a state highway.

Most property owners have been willing to let Caltrans remove the hazardous trees. Caltrans has seen property owner participation rates up to 98 percent in similar tree removal projects around California.

In response to the tree mortality emergency that California Gov. Jerry Brown declared in 2015, Caltrans has already removed more than 50,000 dead trees from along highways in the state.

Photos: Tom Lotshaw, Tahoe Regional Planning Agency

*Using a crane and other heavy equipment, a crew cuts down a dying tree and lowers it to the ground one section at a time.*

For more information: dot.ca.gov/treemortality.

*Tom Lotshaw is the public information officer for Tahoe Regional Planning Agency.*

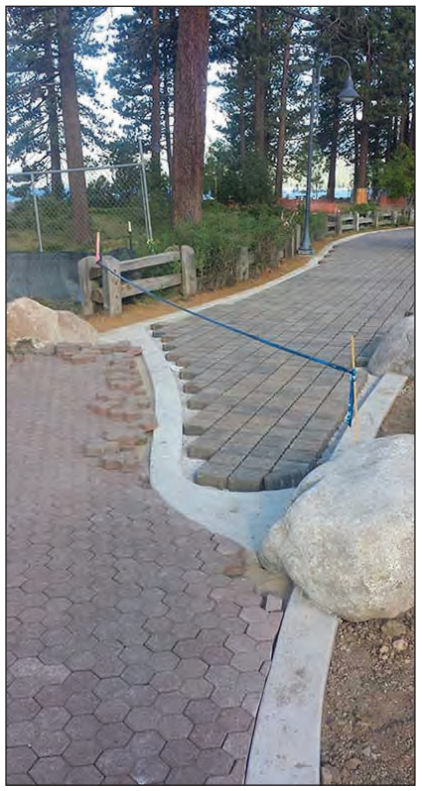


Photo: Placer County

*A new paver sidewalk under construction in downtown Kings Beach.*

## Kings Beach's recent improvements

The projects completed this year in the third and final year of the Commercial Core Improvement Project included:

- A sixth public parking lot opened along Rainbow Avenue, adding 32 more public parking spaces
- Plantings installed in planter beds along the east side of town
- Decorative railings added over the Griff Creek crossing to improve safety and aesthetics
- Traffic posts replaced at key locations at the roundabouts to improve pedestrian safety
- Perimeter fencing added to the Christmas tree lot next to the Log Cabin restaurant
- Additional trash and recycling bins added along state Route 28
- Landscaping added to the Kings Beach monument sign at the corner of Chipmunk Avenue
- Another bus stop shelter

# Reinventing Kings Beach

*Changes to the commercial core make area more walkable and bike friendly*

**By Jim Sloan**
Tahoe In Depth

Work crews this fall put the finishing touches on a major $50 million aesthetic and environmental restoration project in Kings Beach.

The Kings Beach Commercial Core Improvement Project involved redesigning the popular North Shore area's stormwater system to significantly reduce fine sediments entering the lake. At the same time, the commercial core got a vibrant facelift, with a new road alignment, sidewalks, streetlights, and landscaping that beautified the area and made it friendlier to pedestrians and cyclists.

The Kings Beach project was first proposed 15 years ago and construction has been underway for the last three years. Local residents and business leaders were closely involved in the design of the project.

Dan LaPlante, the project manager for Placer County, said Kings Beach's new stormwater system, complete with high-tech treatment vaults, was "on the cutting edge of the technology" and will be monitored and maintained as needed. He said a firm is looking to be hired to check both the water going into the treatment system and the runoff leaving it to measure the fine-sediment reductions.

"We'll be watching those (treatment systems) closely," LaPlante said.

Most visitors to Kings Beach are more likely to notice the other improvements, however. State Route 28 through town was redesigned from a four-lane road to a two-lane road with a center turn lane, and roundabouts were placed at intersections at Bear and Coon streets. The idea was for Kings Beach to become more of a destination than a place to quickly drive through.

"Certain businesses in town have indicated a big increase in business since the improvements have gone in," LaPlante said.

Traffic through Kings Beach can still back up on peak tourist days, but LaPlante said the roundabouts help keep traffic moving. The county installed 34 speed humps on the surrounding residential streets to discourage drivers from racing through to avoid the main highway.

Photos: Placer County

*State Route 28 through Kings Beach was redesigned from a four-lane road to a two-lane road with a center turn lane. Roundabouts (top photo) help keep traffic moving.*

"We thought people would be upset with us, but we actually get requests for (the speed humps)," LaPlante said.

The final work on the commercial core project will be the installation of public art. Community members have already viewed and voted on small art mockups, and Placer County is working with Caltrans to find good locations for two installations. They will likely be erected in the spring of 2018.

Although the project is officially completed, LaPlante said two other major improvements are on the Kings Beach horizon.

One is a roundabout at the intersection of state Routes 28 and 267. Those two roads meet in a traditional intersection with a traffic light, but Placer is considering a roundabout that would expand bike and pedestrian improvements and include street furniture and landscaping.

The roundabout would also tie in with the other proposed improvement— a boardwalk or promenade along the lakeshore through Kings Beach. The community has indicated it would like to see a secondary pedestrian-bike walkway along the lake, and the county is encouraging state parks officials and local developers to include a boardwalk in any of their redevelopment plans. That way, the county can "connect the dots" to complete the promenade when the time comes, LaPlante said.

"This is something the community wants to see," LaPlante said. "We just have to sort out where it would go and what materials we'll need."

# Tahoe taking action to protect forest health

*Angora Fire helps Tahoe residents empathize with thousands affected by California fires*

**By Joanne S. Marchetta**
Tahoe Regional Planning Agency

The heartbreaking fires in Northern California's wine country this October upended hundreds of thousands of people's lives. Multiple fires across Northern California quickly burned more than 240,000 acres, destroyed 8,400 buildings, and killed at least 43 people. The week of Oct. 8 was the deadliest week for wildfires in California history. Our hearts go out to our neighbors in Napa, Sonoma, and Mendocino counties.

The Angora Fire left the Tahoe Region with special empathy for the distress so many people are going through with these wildfires, although their situation is far more devastating. And these fires, like the Angora Fire, are yet another grim reminder that our lives and our livelihoods depend on the continued steps we take to reduce wildfire risk and prepare for even more catastrophic wildfires.

Forest health remains a serious issue for Lake Tahoe. Like so many other areas, Tahoe's forests face threats from climate change, drought, bark beetle outbreaks, and tree mortality that increase the risk of wildfire. Residents, fire districts, and other local, state, and federal partners are working collaboratively to address these threats. Still, more is needed.

Because of climate change, the fire season in the western U.S. is over two months longer than it was just four decades ago. Wildfires are larger, more frequent, and burning more intensely. Drought has left forests with millions of dead trees to fuel more dangerous fires.

Improving forest health and preparing for wildfire takes action on many levels. Twenty partner agencies on the Tahoe Fire and Fuels Team, including the Tahoe Regional Planning Agency (TRPA), are working together and with basin residents to address each of them. But we must continue to act now, before Tahoe's next fire is burning.

People who manage the vegetation on their property to create defensible space around homes and businesses are taking an important first step. Properties without defensible space are much more at risk, allowing wildfire to spread among brush to structures and burn into the tree canopy through ladder fuels. More than 27,500 properties at Tahoe have been inspected for defensible space over the last 10 years. People who have not created defensible space or requested an inspection to learn what they need to do to prepare for wildfire should do so now. It is something each of us can do today, and fire agencies are ready to help.

Photo: Tahoe Daily Tribune

*The Angora Fire gave Tahoe residents and visitors empathy for Californians who faced wildfires earlier this year.*

Photo: California Tahoe Conservancy

*The Lake Tahoe West Restoration Partnership is working on a comprehensive plan to improve forest health, water quality, and recreation opportunities throughout 60,000 acres of the West Shore, in an area extending from Emerald Bay to Dollar Point near Tahoe City.*

But one property's defensible space is only as good as its neighbor's. That's why Tahoe Fire and Fuels Team partners launched the Tahoe Network of Fire Adapted Communities. Led by the Tahoe Resource Conservation District, this program is helping residents work with their neighbors and local fire districts to improve wildfire preparedness on a broader scale in our communities.

Most Tahoe neighborhoods are in the wildland-urban interface — the dangerous areas where our homes and the forest meet. These areas are the top priority for removing overgrown brush and trees that could fuel a catastrophic fire. Over the last 20 years, the Tahoe Fire and Fuels Team has thinned 70,000 acres of forest in the wildland-urban interface. Partners are working to treat the remaining 50,000 acres over the next 10 years. Along with more people creating defensible space, brush removal, tree thinning, and prescribed fire in wildland-urban interface areas must continue for us to improve forest health and reduce wildfire risk.

Just as important is expanding forest health initiatives into the larger forest. Tree mortality from drought and bark beetles is a growing danger. California now has more than 102 million dead trees. While the most severe mortality is in the southern Sierra and foothills, the number of dead trees at Tahoe has grown steadily and now stands at more than 136,000.

A collaborative tree mortality task force is working to address these issues in the Tahoe Basin. And in August, TRPA issued an emergency permit for Caltrans to remove dead and dying trees along highways at Tahoe. Work started this September along state Route 89 and will continue next year along other highways.

The Lake Tahoe West Restoration Partnership is working on a comprehensive plan to improve forest health, water quality, and recreation opportunities throughout 60,000 acres of the West Shore, in an area extending from Emerald Bay to Dollar Point near Tahoe City.

This innovative landscape-scale initiative is being led by the U.S. Forest Service, California Tahoe Conservancy, California State Parks, National Forest Foundation, and TRPA. It will help us achieve multiple project benefits in a more streamlined, cost-effective manner and develop a model for healthy forests in other parts of the Tahoe Basin.

We are making progress, but have much more to do. By continuing to work together, we can reduce the risk of catastrophic wildfire at Tahoe.

Each of us has a role to play, from wildfire preparedness to helping prevent wildfires—more than 90 percent of which are human caused through carelessness. Please reach out to aid those in Napa, Sonoma, and Mendocino who need help now more than ever. And join us by taking action to protect the health of Tahoe's treasured forests and the safety of our communities.

*Joanne S. Marchetta is executive director of the Tahoe Regional Planning Agency.*

## Where to donate

To support victims of the fires, visit:

- Napa Valley Community Foundation — napavalleycf.org
- Community Foundation of Sonoma County — sonomacf.org
- Community Foundation of Mendocino County — communityfound.org

# South Tahoe, Vail, and LTUSD adopt green pledges

*Resorts, government agencies working to reduce area's carbon footprint*

**Devin Middlebrook**
Tahoe Regional Planning Agency

Lake Tahoe is turning green, in a good way. This year several agencies and organizations took a green pledge to help reduce air pollution and greenhouse gas emissions in the Tahoe Basin.

## City of South Lake Tahoe

In April 2017, the City of South Lake Tahoe adopted a resolution to use 100 percent renewable electricity by 2032. South Lake Tahoe became the 26th city in the United States to adopt similar resolutions. Since that time, over 150 cities have made a similar pledge.

The pledge was brought to the city by a coalition of community members and environmental organizations under the Climate Reality Project's I AM PRO SNOW campaign, which is aimed at boosting renewable energy in mountain resort communities that depend on snowfall for their economies. The Sierra Nevada Alliance, Climate Parents, Tahoe Regional Planning Agency, Lake Tahoe Sustainability Collaborative, and other local groups also backed this pledge.

Achieving this goal will require a combination of energy efficiency projects, renewable energy generation, and community education. All members of the South Lake Tahoe community play a role in reaching the 100 percent renewable goal by 2032.

## Lake Tahoe Unified School District

The Lake Tahoe Unified School District followed the City of South Lake Tahoe by adopting a Healthy and Environmentally Sound Schools resolution this fall. The resolution outlines actions the school district will take to make schools healthier for their students and the environment.

These actions include matching the city's 100 percent renewable electricity pledge, increasing energy efficiency in buildings, increasing recycling and composting, and reducing the number of vehicle miles traveled in getting students to school. The school district was recognized with a 2016 Best in Basin award for energy upgrades that will save the school district $6 million over their lifecycle and greatly reduce their energy usage.


Photo: Vanessa Vancour/CC BY-NC-SA 2.0

*Vail Resorts, the operator of Heavenly Mountain Resort, promises zero net emissions, zero waste to landfill, and zero net operating impact to forests and habitat by 2030.*


The Climate Reality Project

Photo: Climate Reality Project

*Doug Stoup, left, and Parker Liautaud at the South Pole after setting a new speed record from the coast of Antarctica to the South Pole.*

## Vail Resorts

Private industry is also leading the way when it comes to protecting the environment. This July, Vail Resorts (operator of Heavenly Mountain Resort, Kirkwood, and Northstar) announced their "Epic Promise for a Zero Footprint" program. This program set the target of zero net emissions, zero waste to landfill, and zero net operating impact to forests and habitat by 2030.

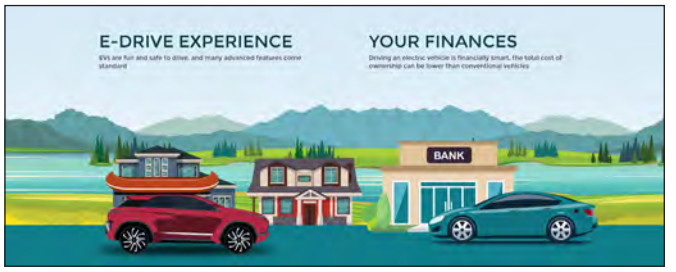
This ambitious pledge shows the dedication by Vail Resorts to protect the land they operate on, ensuring future generations can enjoy the same experience. Most ski resorts around Lake Tahoe, including Diamond Peak, Squaw Valley, Alpine Meadows, Homewood, Sugar Bowl, Granlibakken, and Sierra-at-Tahoe, are committed to protecting the environment through a variety of programs and projects .

*Devin Middlebrook is the sustainability program coordinator at TRPA.*

# Region expanding electric vehicle charging options

Photo: Tahoe Regional Planning Agency

*With options increasing and prices decreasing, electric vehicles are poised to become even more popular. The Tahoe area's charging infrastructure must serve residents and visitors alike.*



*The website tahoealternativefuels.com provides information about buying, owning, and charging electric vehicles.*

## *Website explains vehicle technology, maps area charging stations*

**By Devin Middlebrook**
Tahoe Regional Planning Agency

The rise of electric vehicles in the Tahoe-Truckee Region has begun.

Situated between Interstate 80 and U.S. Highway 50, the region is poised to become an electric highway in the sky, connecting to and from the Bay Area, Reno, and beyond. Local adoption of electric vehicles has outpaced hybrid vehicles when they were first released in the early 2000s.

To plan for an electrified future, TRPA and Truckee Donner Public Utility District released a plug-in electric vehicle plan earlier this year.

Developed with many community partners and funding from the California Energy Commission, the plan is designed to improve the Tahoe-Truckee region's readiness for electric vehicles with better vehicle-charging infrastructure, streamlined permitting, incentives, and public outreach.

Electric vehicle technology is advancing at a rapid pace. Most major vehicle manufacturers plan to have electric options within the next five years. With more model options and decreasing prices, demand and use of electric vehicles will rapidly increase in the next decade, experts predict.

Planning for increasing demand and future vehicle technology is critical to serve the needs of the public. In addition, the environmental benefits of electric vehicles include a reduction in air pollution and greenhouse gas emissions and the amount of dripping oil and gas that can reach Lake Tahoe. Demand for charging infrastructure at Tahoe is unique and must serve both residents and visitors through a combination of home, workplace, destination, and recreation sites.

The region is rapidly expanding its plug-in electric vehicle charging infrastructure with dozens of new charging locations added in the past year. As more charging stations become available, drivers will no longer have to worry about running out of power or not finding a charging location.

This fall, the Nevada Chapter of the American Planning Association recognized the Tahoe-Truckee Plug-In Electric Vehicle Readiness Plan with awards for most outstanding plan and most outstanding public outreach. The awards were presented as part of the group's annual DeBoer Awards program.

Whether you own an electric vehicle or might consider it for your next vehicle, visit tahoealternativefuels.com to learn more about charging stations, vehicle technology, rebates, and more.

# Making headway battling aquatic invasive plants

*Success from Emerald Bay work being replicated around the lake*

Tahoe Resource Conservation District Staff

After four years of treatment, Emerald Bay remains free of aquatic invasive plants.

In 2010, the Tahoe Resource Conservation District (Tahoe RCD), in collaboration with California State Parks and the Lake Tahoe Aquatic Invasive Species Program, began treating 6 acres of Emerald Bay to remove Eurasian watermilfoil, an invasive plant that alters the aquatic ecosystem by raising the pH of the water, decreasing oxygen, and increasing water temperature. Dense mats of vegetation can also interfere with boat navigation and recreational activities such as paddling and swimming.

The Emerald Bay project was a model for success that is being replicated at other locations.

This year, Tahoe RCD realized a similar achievement at Crystal Shores East Marina in Incline Village. From 2014 to 2016, crews used diver-assisted suction removal and lake-bottom barriers to eliminate invasive plant growth. In 2017, no plants were detected in any of the three Crystal Shores marinas. Surveillance surveys will continue in 2018.

With support from public and private partners, teams are controlling invasive plants at other locations around the Lake Tahoe Basin. The University of Nevada, Reno's 2015 Implementation Plan for the Control of Aquatic Invasive Species within Lake Tahoe is guiding the way. The plan uses an ecological and science-based framework to prioritize locations for controlling satellite populations of invasive plants.

In 2017, Tahoe RCD surveyed over 9 acres of aquatic plant habitat at Lakeside Beach and Marina, Fleur du Lac, Crystal Shores, Tahoe Vista Boat Launch, the Truckee River, and 3 miles along Nevada's shoreline. All Eurasian watermilfoil and curlyleaf pondweed plants were removed this season, and the sites will be monitored next year.

In a pilot project, Inventive Resources, Inc. and Tahoe RCD used ultraviolet light to treat invasive plants at Lakeside Marina. Lab studies and small field tests have shown that ultraviolet light damages the DNA and cellular structure of aquatic plants, causing them to die back. Tahoe RCD will work with partners this winter to finalize initial results and schedule post-treatment monitoring for 2018.

Photo: Marine Taxonomic Services

*Divers explore the Truckee River to look for signs of aquatic invasive plants.*

Photo: Marine Taxonomic Services

*A diver uses a large underwater vacuum to remove aquatic invasive plants from the bottom of Lake Tahoe.*

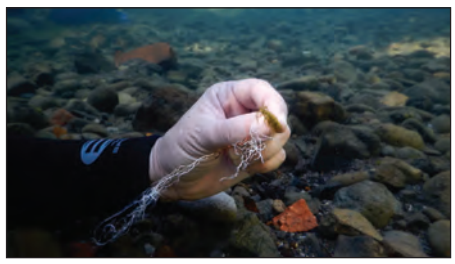


Photo: Marine Taxonomic Services

*A diver shows how long the root system is for a Eurasian watermilfoil plant.*

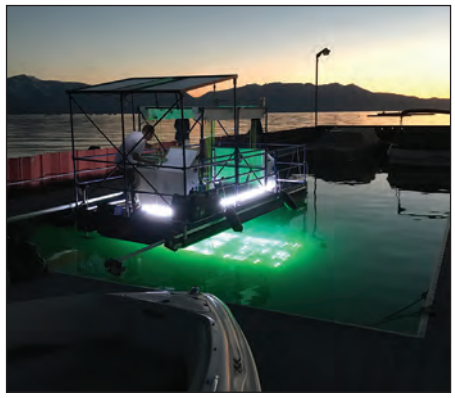


Photo: Inventive Resources, Inc.

*A boat equipped with ultraviolet light is used to kill aquatic invasive plants at Lakeside Marina.*

"From our work in Emerald Bay and Crystal Shores, we know that invasive plant populations can be reduced, and with continued treatments, we will be able to better manage populations around the lake in the future," said Nicole Cartwright, executive director at Tahoe RCD. "While bottom barriers and diver-assisted suction removal have proven to be successful, we need to identify other techniques that could help us get ahead of the battle, particularly with persistent plant species such as curlyleaf pondweed, and much larger infestations that are looming."

Funding for these projects has been provided by California Tahoe Conservancy, Crystal Shores East Homeowners Association, California Department of Water Resources, Incline Village General Improvement District, Tahoe Water Suppliers Association, Nevada Division of State Lands, Tahoe Fund, Tahoe Regional Planning Agency, Truckee River Fund, and the U.S. Fish and Wildlife Service.

Photo: Tahoe Keys Property Owners Association

*Aquatic invasive plants are loaded on a truck to be hauled away.*

## *Tahoe Keys crews pull 500 truckloads of weeds from lagoons*

**By Water Quality Committee**

Tahoe Keys Property Owners Association

The Tahoe Keys Property Owners Association members voted in 2017 to pay up to $1,600 each to continue water quality work, and staff and consultants responded with concerted action to control aquatic invasive plants.

After the past few years of study and evaluation, in 2017 the Tahoe Keys Integrated Weed Management Plan moved into more fieldwork. Improving existing aquatic invasive plant management methods, implementing new methods, and exceeding regulatory requirements are now underway.

Weed harvesting operations stepped up in the summer of 2017 with seven-day-a-week schedules and 5,429 hours between April and September. Crews pulled 7,692 cubic yards of aquatic invasive plants from the lagoons — equivalent to more than 500 dump truck loads — maximizing efficiency with the purchase of a fragment-collection skimmer boat.

To starve the weeds of oxygen, nearly 140 bottom barriers, loaned by the Lake Tahoe Aquatic Invasive Species Program, were installed, covering more than three-quarters of an acre — the largest barrier project to date in the Tahoe Keys.

To further reduce the spread of aquatic invasive plants, the property owners association installed a boat

*Continued on page 9*

# Chipping toward a healthier forest

## *CHIPS job-training program arrives to help improve National Forest*

**By Jaclyn Tain**
U.S. Forest Service

In 2004, a short distance away from the shores of Lake Tahoe in Calaveras County, a community was suffering. A lack of living-wage jobs contributed to a declining local economy. Elementary school enrollment was dropping at a rapid pace. Community members, including those from the West Point Miwok Community, knew that something needed to be done.

The community formed the nonprofit Calaveras Healthy Impact Product Solutions or CHIPS. CHIPS partners with indigenous groups and strives to provide living-wage jobs in the local community on public lands. The crews perform a variety of work, including forest and meadow restoration, watershed stewardship, cultural site work, fire-safe fuel reduction, and fuel break construction in neighborhoods located in and around National Forest land or the urban interface. CHIPS now employs over 20 individuals with a nine-person governing board.

Crews not only receive a living wage, which stimulates the local economy, they also get the opportunity to connect back with the land and, in many cases, archaeological sites significant to their tribal heritage.

After years of success, CHIPS decided it was time to offer this opportunity to a larger audience.

In 2016, members of the Hunga Lel Ti Community, the Southern Band of the Washoe Tribe of Nevada and California residing in Alpine County, became involved through their chairman, Irvin Jim Jr., who negotiated an agreement to work with CHIPS on the Butte Fire restoration in Calaveras County, California.

Jim and the Community Council had a goal of finding jobs for community members. Jim recruited a crew eager to work on the project. Having a steady job, although seasonal, improved the livelihood of members and their families.

This successful work began the push to bring the program home locally. In February 2017, the U.S. Forest Service Lake Tahoe Basin Management Unit (LTBMU) partnered with CHIPS to serve as a job-training site with multiple restoration opportunities on National Forest lands in the Lake Tahoe Basin.

Photos: U.S. Forest Service

*CHIPS crews clear branches off recently downed hazard trees (top photo), while other crew members bring debris from cleared trees to a chipper to be turned into mulch.*

"This provided a unique opportunity for Hunga Lel Ti members to work in our aboriginal homeland as the tribe had their summer camps at Tahoe and winter camps in the Carson Valley," Jim said.

The season kicked off with one crew of around 12 tribal members, who hit the ground running. They removed hazard trees in Blackwood Canyon, to promote safety of recreationists along with health and resilience of the forest. They also restored the Washoe Tending and Gathering Garden at the Tallac Historic Site.

"CHIPS is an incredible training program that provides participants with valuable skills for work in natural resource management fields and enhances the Forest Service's capacity to improve the health of forest land throughout the Lake Tahoe Basin," said Teresa McClung, deputy forest supervisor for the LTBMU. "We look forward to expanding our training program with the Washoe crew in the future."

Communities prospering on and taking care of public lands promote healthy forests and a connection to the land. The Lake Tahoe Basin has an abundance of projects and a long healthy partnership is anticipated.

For more information on the CHIPS program, visit calaveraschips.org.

*Jaclyn Tain is the Every Kid in a Park Resource Assistant for the Lake Tahoe Basin Management Unit.*

## *Tahoe Keys*

*Continued from page 8*

backup station to shed weeds from boat propellers before leaving lagoons, created an instructional video for boaters, educated landscapers and other professionals on best practices for water quality, and hosted five Eyes on the Lake educational events with the League to Save Lake Tahoe.

While continuing the wide variety of studies, evaluations, and other tasks laid out by Lahontan Regional Water Quality Control Board's Waste Discharge Requirements in 2014, the association also tracked curlyleaf pondweed, an established invasive plant that continues to threaten Lake Tahoe's health and clarity.

Association staff took on the invasive plants in Lake Tallac by removing obstacles from its waters that inhibit harvesting and hand-pulling Eurasian watermilfoil in key locations.

Next year, the association plans to install and evaluate laminar flow aeration — a mechanical system that pumps air from the bottom up through the water column. The association hopes that by oxygenating water close to the lagoon bottom it can reduce sediment, restore a healthier ecosystem, and combat future algae blooms. To find out more about the Tahoe Keys Property Owners Association's work, visit keysweedsmanagement.org.

### Algae update

Tahoe Keys Property Owners Association detected a blue-green algae bloom (cyanobacteria) in its lagoons on Aug. 15 and reported it to the proper authorities.

The association monitored the bloom, taking samples and working with the Lahontan Regional Water Quality Control Board. Both entities determined the presence of low levels of toxins (microsystins and anatoxin-a) and Lahontan recommended posting caution signs.

The bloom was likely caused by warming water and additional nutrients carried by runoff from the historic winter of 2016-17.

The toxin levels decreased to low or nondetectable levels with cooler weather and the caution signs were removed. The association will monitor for algae blooms in the summer of 2018 and is taking steps to reduce the likelihood of future blooms by reducing nutrient runoff, improving landscaping, and aerating the water.

# The first Forest Service ranger station at Tahoe

*105-year-old cabin has been preserved and is eligible for National Register*

**By Don Lane**
U.S. Forest Service

Four years after it was discovered in 1844 by explorer John Charles Fremont, the Tahoe Basin saw an influx of people attracted to the 1848 discovery of gold nearby. Fortunately, there were few gold nuggets in the streams around the lake and the basin was largely left unchanged.

However, just a few years later, in 1859, another great discovery to the east of Lake Tahoe, the Comstock Silver Lode, would have a substantial impact. The Tahoe Basin would never be the same.

Wood for the Comstock mines came from Tahoe Basin forests, and over the next 35 years, over two-thirds of the basin's forests were logged. The timber was used for the mines, railroads, and growing cities of the West.

Voices of concern grew louder as the lands around Lake Tahoe were being changed forever. Finally, after the rich veins of ore from the mines ran dry, a movement arose to try and save what was left of the forests around the basin.

In response to petitions from the Sierra Club, Stanford University, and prominent individuals, the Lake Tahoe Forest Reserve was established by President William McKinley in 1899, six years before the establishment of the U.S. Forest Service.

The designation encompassed nearly 240 square miles of land and included 37,000 acres located in the southwest portion of the Tahoe Basin.

## The First Lake Valley Rangers

After the establishment of the Forest Service in 1905, the Lake Tahoe Forest Reserve was managed by three men: Assistant Forest Ranger James Stout, Forest Guard Lester Walker, and Deputy Forest Ranger Raymond Tyler, who served as the first Lake Valley District ranger.

The Lake Valley Rangers reported to the ranger in charge, Samuel L. Ellis, who was located in Sonora on the Stanislaus Reserve. Their headquarters was a primitive camp three-quarters of a mile below the Echo Post Office in Strawberry Valley, which was approximately 10 miles west of the Tahoe Basin.

For the rangers, Lake Tahoe Forest Reserve summer duties consisted of patrolling for and extinguishing fires, surveying boundaries, posting boundary signs, building and managing trails, and managing incoming cattle and sheep.

Photo: U.S. Forest Service

*The first Lake Valley Ranger Station was built in 1912. By 1920, the Lake Valley Rangers decided they needed a year-round ranger station in Meyers, about three miles away, and the rustic cabin was used as a summer cabin by the Avery family until 1959. For many summers it was used by a Forest Service packer named James Hawksworth. In 2004, the cabin was renamed Hawksworth Pack Station.*

Managing the Lake Tahoe Forest Reserve from the Strawberry Valley location proved difficult. Supplies and official communications from the Sonora office were transported via stagecoach and the long commute between Strawberry Valley and the basin was a challenge to say the least.

In addition, living accommodations within the reserve were poor. The cold winter rain and snows of late spring and fall made living in tents difficult during these seasons. The rangers frequently had colds and the horses grew unhealthy due to the icy winds.

## Plans for new cabin

As the years passed and interest in the Tahoe Basin grew, it became apparent that a permanent structure was needed from which the Rangers could more effectively manage the Lake Tahoe Forest Reserve.

In 1911, after a half-dozen years of commuting and using temporary camps, Lake Valley Rangers' dreams were about to come true.

In July that year, Eldorado National Forest Supervisor Evan Kelly sent a letter to the current Lake Valley District Ranger, J.P. McMillan, saying money was available and plans had been drawn up for the Lake Valley Ranger Station and barn. Kelly asked whether lumber could be obtained for the building.

Kelly sent out requests for bids to construct a cabin and barn in Lake Valley. They called for all materials and work to be furnished by the contractor and the station and barn to be completed for occupancy on or before Sept.15, 1911.

In August, a bid received from Marshall Hughes came in at $398 for construction of a 14-by-28-foot station and $212 for an 18-by-26-foot barn. Another bid received from Al Smith for both the station and barn was for $638.

Kelly sent a letter to the Lake Valley Rangers stating that the bids were rejected because they were too high.

Construction would not begin that season. He said they'd need to wait for a mill to be built in the vicinity to provide reasonably priced lumber.

So it was that in 1912, in early summer, the first Lake Valley Ranger Station was finally built. However, the barn would take a few more months to complete.

## A New Era

The Lake Valley Rangers continued to carry out their duties in the rapidly growing Tahoe Basin. By the 1920s, the need for a year-round ranger station at Lake Tahoe became apparent.

The decision was made to move out of the rustic cabin to a new location 3 miles away in Meyers.

A local doctor, Frank Avery, was authorized to use the former station for $30 a year. It was noted that when the Forest Service needed it back, the cabin would revert to the agency.

The Avery family occupied and maintained the structure as a summer residence until Jan. 31, 1959, when they relinquished the cabin to the Forest Service. The Forest Service then utilized the cabin to accommodate backcountry and trails staff and to store its equipment.

For many summers, the cabin was occupied by a Forest Service packer named James Hawksworth and the adjacent meadow was used to graze the horses and mules used during the summer months to support the Forest Service wilderness and trails program.

Hawksworth and his wife Donna resided at the cabin for over 30 years while serving the Forest Service.

In the early 1970s, due to concerns for the aging condition of the building, a nearby tent platform was constructed to house Hawksworth, along with a bathroom to replace the original outhouse.

In 2004, the pack station was renamed "Hawksworth Pack Station" in honor of the long-term Forest Service packer.

The original Lake Valley Station has been preserved and today stands as a proud reminder of the early days of the Lake Valley Ranger District. The cabin is now used as an equipment storage site for the Lake Tahoe Basin Management Unit's wilderness program, and has been evaluated and considered to be eligible for National Register of Historic Places status.

*Don Lane is the Recreation and Wilderness Program manager for the Lake Tahoe Basin Management Unit.*

# LimeBike project takes aim at reducing traffic

*Bike sharing experiment shows riders willing to cycle rather than drive for short trips*

**By Chris Carney**
League to Save Lake Tahoe

Photos: Chris McNamara (top), League to Save Lake Tahoe (bottom)
*Community members who rode LimeBikes provided valuable data to planners on such things as hotspots and bicycle-rack needs.*

This past summer, South Tahoe residents and visitors took part in an experiment to change transportation at Lake Tahoe. In partnership with the League to Save Lake Tahoe, LimeBike brought 200 of its custom bicycles to town in mid-July. Using an app on their smartphones, people could rent one of the bikes anywhere on the South Shore for $1 per half-hour. Within days, people could be seen riding the bright green bikes throughout the community.

What brought bike share to Lake Tahoe was the recognition that we needed to reduce traffic at the lake. The region now welcomes more annual visitors than the top five national parks combined. Pollution from those cars is taking a toll on Tahoe's famous clarity, but implementing transportation solutions can often take years. Pilot programs like this summer's LimeBike project can help provide immediate relief while enabling the region to test out solutions that might offer long-term benefits.

"The good news is that people clearly like the bike share model," said Jesse Patterson, the League to Save Lake Tahoe's deputy director. "Ridership took off immediately, with our little South Tahoe region outperforming cities as large as Seattle for a few of the peak days."

Overall, nearly 6,000 community members and visitors rode LimeBikes, making almost 13,000 trips around the South Shore. Using cutting-edge technology, the bikes are GPS tracked and provide critical data on where people are biking. Our region's public agencies and planners are excited to put that data to use.

"The data collected through the bike share pilot helps us better understand hotspots of activity for short trips, bicycle rack needs by location, and where we have the biggest gaps in our first and last miles of the transportation system," said Morgan Beryl, senior transportation planner for the Tahoe Regional Planning Agency.

One of the more important aspects of the pilot project was to determine whether a bike share service like LimeBike could help reduce traffic by giving people a fun and attractive alternative to driving during Tahoe's busy summer season. The data LimeBike provided from the pilot season brought great news: the average duration of a bike rental was less than nine minutes, and the average distance was barely a mile.

> *Overall, nearly 6,000 community members and visitors rode LimeBikes, making almost 13,000 trips around the South Shore.*

"Those stats show that the vast majority of the bike share customers use these bikes for short, point-to-point trips," said Marissa Fox, the League's senior policy analyst. "These short rides are clearly bike rides for transportation, not for recreation. The data gives us good encouragement that people were biking instead of getting into their cars."

That customers were choosing LimeBike for short trips under 10 minutes also showed they were competing mostly with cars, not Tahoe's local bike rental shops, where most rentals are half-day or longer.

The bike share mapping data backs up the value of bike share in replacing car trips. LimeBike showed hot spots of ridership in the tourist core, in patterns that demonstrated that visitors were parking at their hotels and choosing the bike share system to get around during their Tahoe vacation.

In addition, the crew of locals that LimeBike hired to redistribute bikes found a large number of bikes at Stateline each day during the time of shift changes for casino workers, showing that a good number of local workers were choosing to bike to work.

"Every time a Tahoe resident or visitor chooses to travel by bike instead of by car, it reduces pollution that harms Lake Tahoe," said Patterson. "What's even more exciting is that giving people more options to hop on a bike also takes advantage of the outstanding bike paths that Tahoe's local jurisdictions have been building in recent years."

"The most noteworthy things I saw about the 2017 season in Tahoe was the number of riders that clearly have not ridden in a long time," said Nick Fong, international operations manager with LimeBike. "With our overall company goal of just getting more people to ride, it was all worthwhile just to see the smiles on people's faces as they rode by — getting their biking legs back with each pedal. If we can get more people on bikes just by making bikes more accessible, then we've done our job."

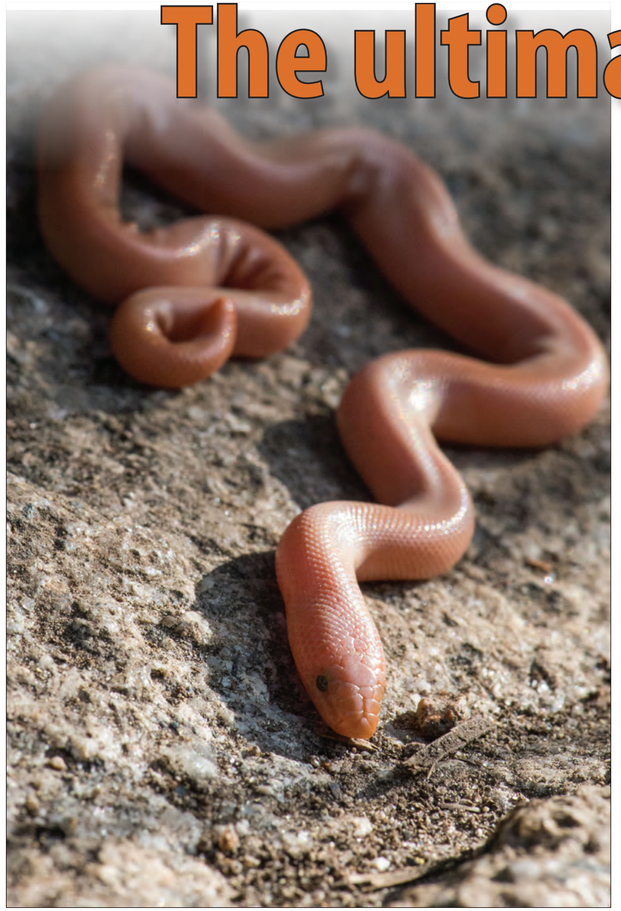
LimeBike has removed its fleet for Tahoe's snowy winter, but they plan to bring their bike share service back to Lake Tahoe in 2018.

*Chris Carney is the communications manager at the League to Save Lake Tahoe.*

# The ultimate Tahoe locals

## *Basin is home to a variety of unusual species*

By Adam Jensen ■ Tahoe Regional Planning Agency



Photos: Tom Lotshaw (top) and drakehs.org
*The northern rubber boa, above, is considered the sweetheart of the reptile kingdom and can be found in such places as Desolation Wilderness. A mountain beaver, right, munches on some branches.*

Think of them as your next-door neighbors — the hundreds of species of wildlife inhabiting the Lake Tahoe Region. From boas to beavers to salamanders that roll down hill, the area boasts some unique inhabitants. Each is adapted to its own niche in the sometimes-unforgiving Sierra Nevada. Some species you may know, others maybe not, but here's a look at just a few of Lake Tahoe's wildest locals.

### Showshoe hares and white-tailed jackrabbits

As you're out and about this winter, there are two types of rabbit species that may be donning new coats right alongside you. Both the snowshoe hare and the white-tailed jackrabbit make their homes at Lake Tahoe, and both turn white during the winter months to camouflage themselves from predators.

While some people assume all white rabbits seen during the winter at Lake Tahoe are snowshoe hares, white-tailed jackrabbits are widespread in open country above 8,000 feet, said Will Richardson, executive director and co-founder of the Tahoe Institute for Natural Science (TINS). Snowshoe hares, the smaller of the two species, can be found "just about anywhere on the West Shore," he added.

Another common rabbit variety, cottontails, began their spread around the Lake Tahoe Basin in the early 2000s and closed the final gap in their east-to-west distribution in 2016, Richardson said. TINS is interested in speaking with people with first-hand knowledge of when the cottontails began appearing in their neighborhoods to further its understanding of the species' spread.

"I've been here 21 years, and I think the first time I saw a rabbit was five years ago," said Kathy Strain, a South Shore resident and associate professor of biology and environmental science at Lake Tahoe Community College.

The spread of the cottontails may have helped the gray fox expand its range into the area as well.

### Mountain beaver

People may be familiar with the distinctive dams built by the paddle-tailed variety of American beavers, which were pre-settlement inhabitants of the Lake Tahoe Region before being trapped out of existence in the area and later reintroduced.

There's another variety of beaver that also calls the area home. The mountain beaver is significantly smaller than the American beaver and lacks the distinctive tail. Richardson described the species as an "overgrown and very primitive vole."

While they don't build large dams like the American beaver, the burrowing species can still change hydrology, making perennial streams go underground through extensive tunnels it builds just under the soil surface.

"There's not a lot known about them," Richardson said. "We seem to think that they're fairly rare."

There are American beavers all around the Tahoe area, as well as muskrats, which could be confused with the mountain beaver. The muskrat has a long, flat tail, while the mountain beaver's tail isn't clearly visible.

### Northern rubber boa

"Boa constrictor" and "Lake Tahoe" are not often found in the same sentence, but the area does host a species of snake that uses constriction to catch its food.

Photo: Will Richardson
*The Mount Lyell salamander uses acrobatics to survive.*

The northern rubber boa varies in color from brown to orange to pink and can be found in a variety of habitats around the lake. Desolation Wilderness, near the lake's southwest corner, offers particularly inviting environs for the snake.

The boa can reach about 2 feet in length and is not dangerous to humans. Its head-like tail confuses both predators and prey, and it has a reputation among herpetologists as having one of the better personalities among its ilk.

"If there's a sweetheart in the reptile world, it's the rubber boa," Richardson said.

One snake variety with a less stellar reputation among the public, the rattlesnake, may also be finding homes closer to the Lake Tahoe Basin.

It's pretty clear that rattlesnakes are able to reach the Lake Tahoe Basin from the west, Richardson said, noting the number of the venomous snakes that can be found at places like nearby Lover's Leap. It's unclear if they are also able to make it up from the east, Richardson said.

There is evidence that climate change is driving species to higher elevations. Whether the movement of rattlesnakes toward Lake Tahoe is temporary or a long-term trend is unclear, Richardson said.

While rattlesnakes may not be people's favorites, Richardson noted they do provide an important ecological role of controlling rodent populations that can spread disease.

### Western pearlshell mussel

Mussels may be more associated with the California coast than the Sierra Nevada, but some South Shore streams host a long-lived native bivalve that is an indicator of environmental health.

The average life span of the western pearlshell mussel is 60 to 70 years, although some individuals are thought to have lived more than 100 years, according to the Xerces Society for Invertebrate Conservation.

"Because this species is sedentary, sensitive to environmental changes, and long-lived, it can be an excellent biological indicator of water quality," according to the society.

The mussels depend on trout species as part of their life cycle, as the juvenile form of the western pearlshell attach to fish prior to dropping off and burrowing into soft substrate as adults.

The native mussels should not be confused with Asian clams, an aquatic invasive species that has established populations in the lake, or quagga or zebra mussels, potentially devastating aquatic invasive species that can be found in western waterbodies but have been kept out of Lake Tahoe through prevention efforts including mandatory boat inspections.

### Mount Lyell salamander

The often dry slopes of the Sierra Nevada can be a harsh environment for amphibian species. Still, the Lake Tahoe area does support native populations of frogs, toads, and salamanders.

One of these salamander species, the Mount Lyell salamander, makes its home soaking up the water near snowfields and doesn't have an aquatic phase in its life cycle.

Living below ground and staying inactive during extreme temperatures and conditions, the small gray-to-brown salamander blends in with its granite surroundings. It has also developed an unusual way of defending itself.

"Because they live in steep, rocky, icy terrain, when they get threatened, they curl themselves into a wheel and actually roll downhill," Richardson said.

### Canyon live oak

Known for its expanses of pine trees, Lake Tahoe also supports satellite populations of canyon live oak trees, which are typically found at lower elevations in the foothills.

The trees, also known as golden cup oaks, attract specific species of animal communities.

The California sister butterfly, which features an orange spot near the tips of its wings, is among the species people can find living near canyon live oaks, Richardson said.

Once completed, the Incline Village to Sand Harbor Bike Path will be a great place to look at some of Tahoe's oak trees. The hike down to Vikingsholm in Emerald Bay also provides glimpses of some huge individuals.

### Spotted owl

When it comes to owls, people are most likely to hear great horned owls at Lake Tahoe, and they're most likely to see northern pygmy owls, active during the day and given away by squawking birds signaling their arrival. People could also find spotted owls — but only if they're extremely lucky.

There's a handful of breeding pairs in the area, but the nocturnal species doesn't make itself known to the casual observer, Richardson said.

As with a great deal of wildlife viewing, staying quiet, patient, and observant are keys to finding some of Lake Tahoe's more unusual wildlife. It also never hurts to be in the right place at the right time.

*Adam Jensen is the environmental education specialist with the Tahoe Regional Planning Agency.*

Photo: Will Richardson
*There are a handful of breeding pairs of spotted owls (top photo) in the Tahoe Basin. The white-tailed jackrabbit is more numerous but difficult to spot in the winter after its coat turns white.*

### Make 2018 a "Big Year"

Get to know more of Lake Tahoe's feathered inhabitants during Tahoe Institute for Natural Science's 2018 Tahoe Big Year. The year-long birding event celebrates the hundreds of bird species that occupy the Tahoe Region and brings together birding beginners and enthusiasts alike. More information is available on the institute's website at http://tinsweb.org.

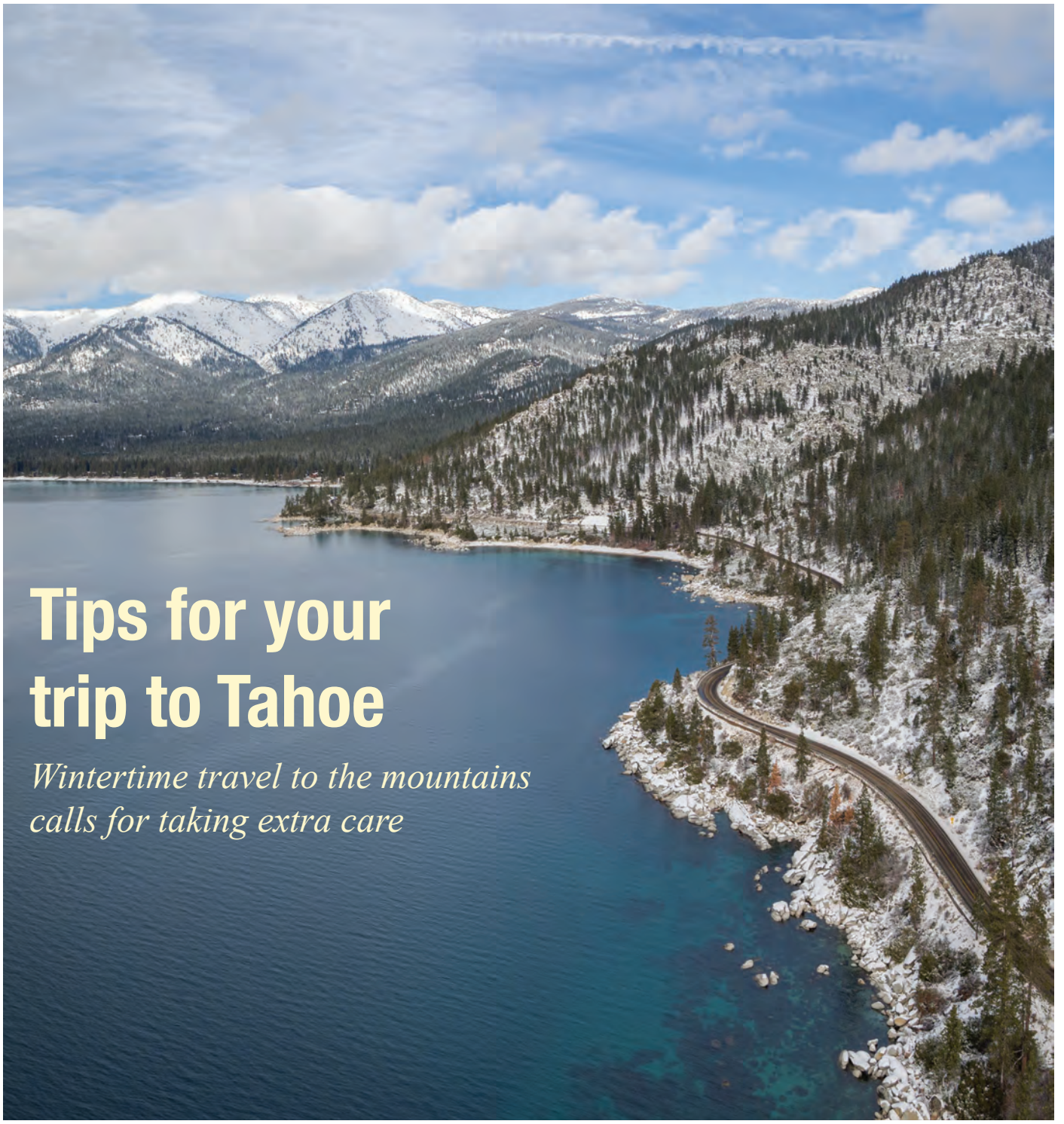



Photo: Drone Promotions

*If you must travel on icy or snowy roads, carry chains, a shovel, and emergency supplies.*

# *Check the weather and plan to avoid storms, traffic jams*

**By Devin Middlebrook**
Tahoe Regional Planning Agency

Winter at Tahoe means hot chocolate, crackling fires, snowball fights, and hitting the slopes. But it also means icy roads, chain controls, and weekend traffic. Follow a few simple tips to make your experience fun, safe, and congestion free all winter long.

### Pick the right time to travel

Coming to Tahoe for a weekend ski trip? Friday rush hour has everyone driving up the hill. Leave a day early and cash in on cheaper hotel rooms. Midday Sunday is the busiest time to leave town and can add hours to your drive home. Plan to leave at an off-time like early Sunday morning, late Sunday evening, or early Monday morning. Why sit in traffic when you could be skiing, shopping, or sitting by the fire?

### Plan ahead and know what to carry

Safety is the No.1 concern when traveling to, from, and around Tahoe during winter months. Be prepared when you head out on the roads. Check the weather conditions before your trip and try to plan around any storms to avoid dangerous conditions. If you must travel on icy or snowy roads, make sure to always carry chains, a shovel, and emergency supplies, including food, water, and warm clothes. Know your driving ability and pull off the road if conditions become unsafe. Before heading out, check these great online resources for up-to-date information on travel time, construction, weather-related roadway restrictions, and more quickmap.dot.ca.gov or nvroads.com.

### Back roads may not be the safest choice

Everyone loves a shortcut. With apps like Waze and Google Maps, shortcuts around traffic are easy to find. What the app doesn't show is that many local roads at Tahoe are steep and during winter weather may have rough road conditions and high snow levels. Remember that shortcuts generally run through neighborhoods and cause traffic jams that impact homeowners and their ability to leave the house on a busy weekend.

### Walk and bike – some paths are plowed

If you need to make a short trip, or get around town on a perfect winter day, take your bike or walk. Did you know Meyers, the City of South Lake Tahoe, and the Tahoe City area clear bike paths all winter long? Last year, 25 miles of path were plowed. Feeling adventurous? Rent a fat tire bike and ride on top of the snow!

### Ride the bus – around town or to the ski resort

The Lake Tahoe Region is famous for its world-class skiing and riding at 14 local resorts. When headed to the slopes, leave your car at home, avoid busy parking lots, and catch the bus. Not only are the buses convenient and heated, in many cases, they are free to ride. Check with your favorite ski resort for shuttle times and pick-up locations.

**Public Transit:**
*South Shore:*
tahoetransportation.org/transit/south-shore-services
*North Shore:*
laketahoetransit.com

### Arriving by flight? Take a shuttle

Flying into Reno for your trip? Skip the car rental and catch a convenient shuttle from the airport on the North Lake Tahoe Express (northlaketahoeexpress.com) or South Tahoe Airporter (amadorstagelines.com/lake-tahoe)

Whether you drive, walk, bike, or take transit, remember that you have the power to make informed decisions. Stay safe and make your winter travel stress-free and fun by planning ahead, knowing your options, and coming prepared.

# White satin moth dims fall colors in Spooner area

*Invasive insect defoliates hundreds of acres of aspen*

**By Mark Enders**
Nevada Department of Wildlife
**and Roland Shaw**
Nevada Division of Forestry

Photos: Mark Enders, Nevada Department of Wildlife

*Aspen defoliation along the North Canyon Road in Lake Tahoe Nevada State Park on July 6, 2017 (upper left) was caused by late-instar caterpillars (upper right). Caterpillars weave communal silk cocoons among the branches of defoliated trees.*

*Overview photos of aspen at Marlette Lake show one taken in 2015 before the white satin moth had spread to Marlette Lake (far left), and one taken in 2017 when more than 75 percent of the aspen canopy had been defoliated (near left). It's unclear whether the number of moths will be affected by another hard winter; populations exploded after the snowy 2016-17 winter, and moth populations have also done well after mild winters.*

When people visit the Spooner backcountry of Lake Tahoe Nevada State Park in October, they expect crisp autumn air and trails awash with fall colors. If they time their trek just right, the aspen along the trail between Spooner and Marlette Lakes offer some of the most beautiful fall colors anywhere at Lake Tahoe.

People might have noticed something different this year. The air was still crisp, of course, and there were still quaking stands of yellow and orange, but they would have encountered a little more brown and gray than usual. In fact, anybody visiting the area during the summer would have noticed the problem then: the white satin moth (*Leucoma salicis*), a non-native moth that was introduced to North America in the early 1920s from Eurasia.

White satin moths are now found in several western states, and have silently made their way to Lake Tahoe in the intervening years since they were first introduced to British Columbia. They overwinter as tiny caterpillars, and by early summer, late-instar caterpillars consume the leaves of any poplar, cottonwood, aspen, or willow within sight.

This has presented a challenge to resource managers at Lake Tahoe Nevada State Park since 2012, when an infestation of white satin moths was first noticed in the aspen of the Spooner backcountry. The amount of defoliation has been variable each year since, but the moths have continued to spread within the park, and 2017 was the worst outbreak yet.

Approximately 226 acres of aspen were defoliated in the Spooner backcountry this year, with the worst defoliation occurring at Marlette Lake, where more than 75 percent of the aspen canopy was lost. There are numerous predators that keep white satin moth numbers in check throughout their native range, but like most invasive species scenarios, natural predators of the white satin moth are lacking at Lake Tahoe.

By early July, the caterpillars weave communal silk cocoons that hang suspended from tree branches. White adult moths emerge into the defoliated tree canopy to mate and start the cycle over again.

This year's flight resembled a snowstorm, and by late summer, surveys found as many as 10 to 15 new caterpillars per leaf in affected aspen stands. While the resulting lack of fall color might seem like a temporary inconvenience, the consequences of defoliation are actually much greater than that.

Songbird nests that were once hidden in the aspen canopy become much more conspicuous to predators. Creeks that were once shaded during the hot summer months become exposed to the sun, causing a rise in water temperature. Perhaps the worst consequence is that aspen stands that are repeatedly defoliated can suffer tree mortality, which is already occurring in North Canyon only five years after the moth infestation was first recognized.

The Nevada Division of Forestry is monitoring the population of white satin moths in the park and will continue to do so in 2018. It will also be investigating a control program to minimize future damage to local and statewide aspen forests.

The Nevada Department of Wildlife hopes to use this opportunity to study the effects of recurring aspen defoliation on native wildlife species. The trip to Marlette Lake has been a classic Tahoe experience for decades, and hopefully it will continue to be for years to come.

*Mark Enders is a wildlife biologist for the Nevada Department of Wildlife and Roland Shaw is a forester for the Nevada Division of Forestry, representing their respective agencies on the Nevada Tahoe Resource Team.*

# Paving the way to lake clarity

*Polymer-blended asphalt mix can help keep fine sediment from reaching Tahoe*

**By Andrea Buxton**
Tahoe Resource Conservation District

Keeping roads in good condition in the Tahoe Basin has always been a struggle, especially when winters wreak havoc on the asphalt surface.

While diligently removing snow so that we may all travel safely, heavy snow removal equipment with large tires covered in hefty chains chew up the surface of the road. Road sand, critical in keeping vehicles from sliding on icy roads, combined with normal vehicular traffic, also grind and crush the pavement surface. The frequent freeze-and-thaw process contributes to asphalt cracking. Dodging pot holes is a requirement for driving safely in the Tahoe Basin. In turn, poor road conditions damage vehicles, increasing the cost of vehicle maintenance.

"Vehicle wear such as popped tires and worn shocks and struts are costs the public pays for inadvertently, and may be greater than or equal to the cost of investing in improving the road surface," says Russ Wigart, stormwater program coordinator with El Dorado County.

It is obvious that poor road conditions lead to more dangerous driving and cycling conditions, unsightly roads, more wear and tear on vehicles, and higher maintenance costs. However, there is a new reason to care about the condition of our roads—water quality. Degrading pavement contributes to an increase in fine sediment particle concentration in stormwater runoff. Fine sediment particles are the leading cause of lake clarity decline.

When the pavement surface gets destroyed by heavy equipment, chains, and normal vehicular traffic, the degraded asphalt gradually gets ground into smaller and smaller particles, resulting in very small sediment particles. When these tiny particles get into Lake Tahoe via stormwater runoff, they stay suspended in the water column because gravity is not strong enough to settle them to the bottom, making the lake look cloudy.

A recent study, conducted by El Dorado County, UC Davis, and Texas Southern University, collected stormwater samples from two roads in South Lake Tahoe to identify the major sources of clarity-reducing fine sediment particles in urban runoff. Molecular markers were used to calculate the fraction of fine sediment particles that came from each source. The major sources were roadside soil, pavement wear, and traction abrasives (road sand). There were no significant differences between the two sampling sites.

Photos: Russ Wigart, El Dorado County

*Pavement wear is the second largest source of fine sediment in urban runoff, but asphalt mixes in recent years have been engineered for better durability.*

"The results of our study suggest that pavement wear is the second largest source of fine sediment in urban stormwater runoff and fine sediment directly affects Lake Tahoe's clarity," says Wigart.

Depending on the time of year and type of precipitation, the contribution of fine sediment particles to urban stormwater runoff from roadside soil ranged from 20 to 70 percent, pavement wear ranged from 18 to 53 percent, and traction abrasives ranged from 7 to 21 percent.

Additionally, a smooth road in good condition is much easier to sweep. Road-sweeping machines are much more effective at picking up fine sediment if the road surface is not covered in cracks and potholes that retain sediment.

Asphalt mix design has come a long way in the last decade and is now engineered for better durability. Adding polymers to the mix increases surface elasticity, allowing the road surface to better resist temperature changes and wear and tear from tire chains and heavy equipment. This mix not only limits the production of fine sediment particles from the road surface, but reduces the cost of road upkeep as well. The City of South Lake Tahoe has been using polymer-based asphalt for the last several years but it is estimated that less than 10 miles of roads have been repaved with the new mix to date.

*When pavement surfaces get destroyed, the degraded asphalt gradually gets ground into smaller and smaller pieces that can eventually reach the lake.*

These findings imply that maintaining pavement in good condition not only improves public safety and decreases vehicle damage, but could positively impact urban stormwater quality and ultimately lake clarity. El Dorado County and the Tahoe Resource Conservation District would like to continue investigating the relationship between high-quality roads and reduced fine-sediment particles in urban stormwater runoff.

"Our ultimate goal is to get good pavement condition recognized as a best management practice for improving urban stormwater quality in the Lake Tahoe Basin," says Wigart. "The results would be a win for lake clarity and a win for public safety. Combining better roads with responsible snow removal and sanding operations could be the future for improving driving experience, reducing vehicle wear, and improving lake clarity."

To stay up to date with the Lake Tahoe Regional Stormwater Monitoring Program please visit: monitoring.laketahoeinfo.org/RSWMP.

*Andrea Buxton is the stormwater program manager at the Tahoe Resource Conservation District and has worked on stormwater research and policy in the Tahoe Basin for 16 years.*


## Environmental groups launch education program

Transportation studies show that nearly 10 million cars enter the Tahoe Basin each year. Drawn to the area's natural beauty and outdoor recreation, most visitors are not accustomed to such a fragile ecosystem with so much wildlife. A new program from the Take Care Tahoe group aims to welcome visitors with friendly tips on how best to behave at Tahoe.

The tips focus on cleaning up dog waste, litter, cigarette butts, and broken sleds. It also cautions visitors about bear interactions, wildfire safety, and overuse of plastic water bottles.

The Welcome to Tahoe messages help create a culture of environmental stewardship by suggesting norms for behaving in this special place.

If you would like a copy of the artwork to send to guests or to post in your home or store, please email info@takecaretahoe.org.

Photo: Kathy Garvey

*What causes booms in populations of yellow jackets, like the one seen here, remains uncertain.*

# Yellow-jacket boom

## *Experts puzzled by insect's cycles*

**By Adam Jensen**
Tahoe Regional Planning Agency

Predicting snowfall is a guessing game each autumn. A spring equivalent is guessing how many yellow jackets will invade the Sierra.

Cold and dry conditions in the winter of 2015-16 likely contributed to a boom in 2016. While the winter of 2016-17 knocked down populations at higher elevations in 2017, it led to monster populations in the Central Valley, said Lynn Kimsey, a professor of entomology at UC Davis.

Exactly what conditions make for a population explosion like 2016 remain a mystery. The size of the 2018 yellow jacket population at Lake Tahoe is unclear.

"We don't really know why they have this boom-bust population thing," said Kimsey, who spoke at the UC Davis Tahoe Environmental Research Center evening lecture series this fall.

There are several species of wasps in the Sierra Nevada, but yellow jackets are a nuisance to humans because they scavenge for sugar, protein, and fat, while the other species survive on live insects.

"We make life good for them," Kimsey said of the yellow jackets, noting they like much of the same food people do.

Kimsey encouraged people to feed their pets indoors, dispose of any fruit that falls from trees, and be mindful of potential food sources like bird feeders. Hanging up yellow jacket traps early is also important. "If you wait until mid-summer, it's too late," Kimsey said.

Yellow jackets build large nests in many locations, including logs and building crevices. Kimsey recommends anyone who disturbs a nest to run away and don't stop.

"Holding still will not prevent them from stinging you," Kimsey said.

If you're stung once, antihistamines and a cold compress are likely suitable treatments, but multiple stings will probably require a visit to a medical professional, she added. And take heart, it could be worse. Wasps rank a two out of four on the Schmidt Insect Sting Pain Index, a relative pain scale developed by entomologist Justin O. Schmidt, Kimsey said. The scale ranks the bullet ant, native to Central America and South America, as having the most painful sting. In an article in Business Insider, Schmidt described the sting as "pure, intense, brilliant pain. ... Like walking over flaming charcoal with a 3-inch nail embedded in your heel."

# The South Shore "Y" comes alive

*Rock climbing, new restaurants, and wellness thriving under the Tahoe Valley Area Plan*

**By Adam Jensen**
Tahoe Regional Planning Agency

Improvements made in the two years since the passage of the Tahoe Valley Area Plan are as diverse as they are abundant.

The redevelopment of several parcels, stormwater treatment, transportation upgrades, and plans for additional open space are all taking shape following the passage of the area plan, a key step in implementing the 2012 Regional Plan. The plan, approved in 2015 by the Tahoe Regional Planning Agency (TRPA) Governing Board, covers 337 acres near the intersection of Highway 50 and state Route 89, known as the "Y," in the City of South Lake Tahoe.

The vision for the area creates commercial, mixed-use, and multi-family development that is pedestrian friendly, transit oriented, and harmonious with the natural environment.

Since the plan's adoption, proponents have submitted 22 applications for projects located within the area plan boundary. Ten of the projects are complete, 11 have been issued permits and/or are under construction, and one is under review.

"We're seeing a lot of environmental redevelopment on the land within the Tahoe Valley Area Plan," said Brandy McMahon, local government coordination program manager for TRPA. "The environmental and community improvements happening around the 'Y' will provide long-term benefits to the lake, residents, and visitors."

Barton Memorial Hospital broke ground on its facilities master plan, which includes the Robert Maloff Center of Excellence. The facility, a 25,000-square-foot orthopedic, sports performance, rehabilitation, and wellness center, is under construction. The project includes the retirement from future development of more than 33,600 square feet of land coverage previously removed from a stream environment zone (SEZ) at Lake Tahoe Airport. The city also approved two mixed-use projects near Barton Memorial Hospital.

The facelift and full remodel of the Factory Stores at the "Y" transformed a dated shopping mall into The Crossing at Tahoe Valley. A former hardware store was turned into the South Lake Brewing Company. The tear down and rebuild of the McDonald's near the "Y" is complete and the city has approved Blue Granite Climbing Gym nearby on Emerald Bay Road, which is scheduled to open in spring 2018.

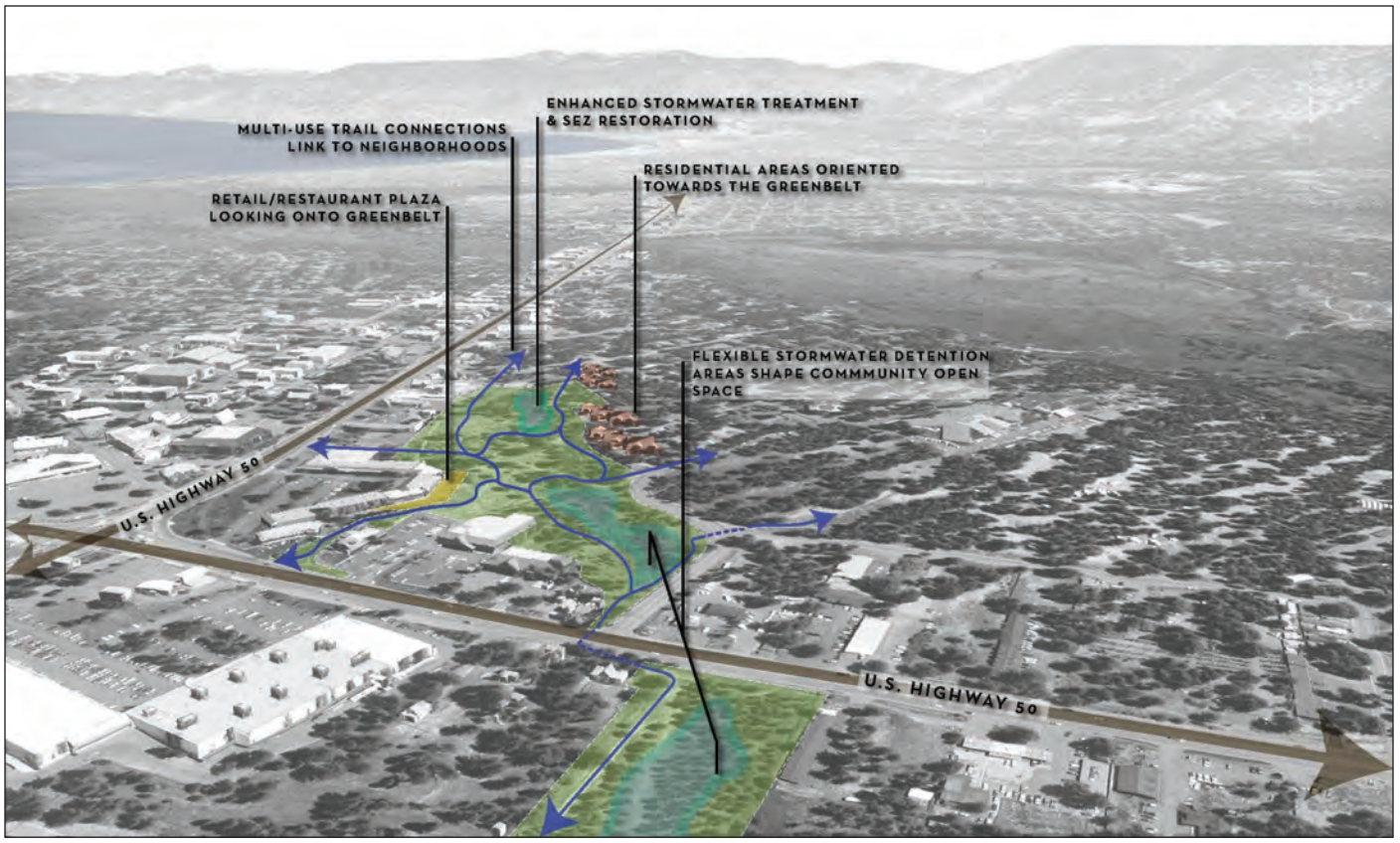



Photo: City of South Lake Tahoe

*A rendering shows concepts for the Tahoe Valley Greenbelt, one aspect of the Tahoe Valley Area Plan.*

"The city is excited to see major improvements to the built environment in the Tahoe Valley area since the adoption of the Tahoe Valley Area Plan," said John Hitchcock, planning manager for the City of South Lake Tahoe. "All these projects directly benefit the community and visitors with increased options for dining, retail, and recreation opportunities. They also directly benefit the environment with the implementation of water quality best management practices."

The Tahoe Valley Greenbelt, a project that includes SEZ restoration, stormwater improvements, and installation of pedestrian-bicycle pathways and amenities, is also being designed and engineered.

In addition to these projects, Caltrans began work on the U.S. Highway 50 to Trout Creek project in spring of 2017. Another lake-saving project within the Lake Tahoe Environmental Improvement Program, it is expected to continue from Winnemucca Avenue to Sierra Boulevard in 2018 and Sierra Boulevard to Trout Creek Bridge in 2019. Benefits of the project include collecting stormwater runoff to protect and improve Lake Tahoe's clarity, as well as roadway improvements like curbs, gutters, sidewalks, and 6-foot shoulders for bike lanes.


Photo: Elevate Wellness Center

*Elevate Wellness Center is one of the many businesses in the new environmentally redeveloped center, The Crossing.*

# Summit highlights Tahoe's restoration, challenges

*Partners rededicate themselves to facing threats from climate change*

**By Tom Lotshaw**
Tahoe Regional Planning Agency

At the annual Lake Tahoe Summit in August, state and federal leaders praised the successes that have come out of bipartisan collaboration to conserve and restore Tahoe's environment, and rededicated the Tahoe Partnership to continue that progress and protect the lake from climate change in years to come.

Significant work has been done to improve Tahoe's health through the Environmental Improvement Program. But warming air and water temperatures pose major challenges, and threaten to affect everything from the lake's famous water quality to the health of its forests and the spread of invasive species.

Speaking about climate change and its impacts at Lake Tahoe, Sen. Dianne Feinstein (D-Calif.), who hosted the 21st annual summit at the Tallac Historic Site, urged the public to get involved to help protect the lake and its environment. "Find an organization, contribute to the private sector efforts if you can. Volunteer, become informed, give us your ideas and give us your thoughts," she said.

Feinstein was joined on stage by Senators Dean Heller (R-Nev.), Catherine Cortez Masto (D-Nev.), and Kamala Harris (D-Calif.); Congressmen Tom McClintock (R-Calif.) and John Garamendi (D-Calif.); Nevada Gov. Brian Sandoval; Joanne S. Marchetta, executive director of TRPA; and keynote speaker and former Secretary of the Interior Bruce Babbitt.

"If we are to protect this basin, this lake, this incredible place we call Tahoe, and indeed the globe we call our home, then we must dedicate ourselves to doing all that is necessary to address climate change and our role as human beings in creating this crisis," Garamendi said.

Working together as the bipartisan Tahoe Partnership, local, state, federal, and private sector partners have invested $2 billion over two decades into lake-saving projects through the Lake Tahoe Environmental Improvement Program.

The program is one of the nation's most ambitious and successful landscape conservation and restoration initiatives, improving the health and resilience of Tahoe's environment.


Photo: Tom Lotshaw, Tahoe Regional Planning Agency

*Sen. Dianne Feinstein, D-Calif., addresses the 21st annual Lake Tahoe Summit, encouraging audience members to get involved in protecting Lake Tahoe.*

Partners have completed 500 projects to reduce stormwater pollution that harms lake clarity; thin forests to improve forest heath and reduce wildfire risk; protect the lake from harmful aquatic invasive species; restore streams, wetlands, and wildlife habitat; and improve recreation opportunities.

Federal lawmakers passed the Lake Tahoe Restoration Act of 2016 last December. The legislation authorizes up to $415 million in federal funding over the next seven years to help ensure conservation and restoration work continues at Tahoe.

Heller said Lake Tahoe's resilience should not be taken for granted. "We all have a history of coming together to do what's best, and we will continue to come together and be successful in finding innovative efforts to ensure Lake Tahoe remains a national treasure for years to come."

Sandoval touted the strong partnership between Nevada and California to protect Tahoe, highlighting Nevada's work to reduce stormwater pollution and complete Environmental Improvement Program projects such as the new bike trail being built from Incline Village to Sand Harbor State Park.

Photo: Tom Lotshaw, Tahoe Regional Planning Agency

*Former Interior Secretary Bruce Babbitt addresses the audience. Babbitt said Tahoe's success should be emulated "all over America."*

Newly elected senators Cortez Masto and Harris praised the strong bipartisan collaboration at Tahoe and the successes it has generated, and vowed to work to strengthen those partnerships and to fight for clean energy, the environment, and public lands.

"Hearing all of these achievements, it's easy to feel as though we have done enough," Cortez Masto said. "Yet the theme of today's summit, a pivotal point for the future of Lake Tahoe, makes clear we still have more to do."

Speaking about the consensus that has formed to protect Tahoe as a national treasure, Babbitt said he sees the League to Save Lake Tahoe's iconic "Keep Tahoe Blue" stickers everywhere he travels in America, from Phoenix to Chicago.

"This place, this magical place, is a natural treasure by virtue of your efforts," Babbitt said on the summit stage. "It has come not from the top down, but from the bottom up. It's an incredible example we ought to emulate all over America. And I would only say, keep it up."

# First round of reductions a major milestone

*Continued from page 1*

particles—which equates to about 70 dump truck loads—will no longer wash into the lake each year. The accomplishment of this first round of reductions is a major milestone for Tahoe."

Fine sediment particles from roads and urban areas are the largest cause of declines in Tahoe's water clarity. When the tiny particles wash into the lake with stormwater, they remain suspended in the lake and scatter light, reducing its clarity.

To reduce fine sediment pollution, local governments and highway departments have reduced the amount of sand and traction abrasives applied to roads, increased street sweeping, built infrastructure to capture and treat stormwater from urban areas, and upgraded Tahoe's roads to reduce the amount of polluted stormwater runoff reaching the lake.

Local governments and highway departments also reduced the amount of phosphorus and nitrogen pollution reaching Lake Tahoe by 8.5 percent and 6 percent over the last five years. Phosphorus and nitrogen are nutrients that can trigger algae growth in the lake.

Forested uplands in the Tahoe Basin are estimated to contribute more than a quarter of the total phosphorus loading into Lake Tahoe, while atmospheric deposition from vehicle emissions is responsible for most nitrogen loading into the lake.

Local, state, and federal land and resource management agencies have restored thousands of feet of stream channel and restored hundreds of acres of marshes and wetlands to reduce the amount of fine sediment and nutrient pollution reaching Lake Tahoe. The performance report finds they are meeting TMDL pollution reduction goals for non-urban areas.

"Reducing pollutant loads from non-urban sources remains an important part of restoring Lake Tahoe's historic clarity. Our review of the accomplishments over the past several years indicates that implementation efforts remain on track with TMDL established goals," said Bradley Crowell, director of the Nevada Department of Conservation and Natural Resources.

Lake Tahoe's water clarity declined by one foot a year on average for several decades, reaching an all-time low of 64 feet in 1997.

Water-quality projects implemented through TRPA's Environmental Improvement Program helped partners meet pollution reduction goals for the first five years of the TMDL and meet the program's first clarity restoration target of 71 feet of clarity by 2016.

The five-year average for Tahoe's clarity was 73 feet in 2016, a 5-foot improvement since the TMDL Program started.

Local governments, state highway departments, and land and resource management agencies will have to continue to reduce stormwater pollution and restore important natural areas like streams, marshes, and wetlands to continue making progress on the Tahoe Clarity Challenge.

The TMDL requires additional reductions in the amount of fine sediment, phosphorus, and nitrogen reaching Lake Tahoe over the next five years. And the next interim clarity restoration target is a five-year clarity average of 78 feet by 2026.

"Restoring Lake Tahoe's famous water clarity requires concerted action around the Tahoe Basin. Meeting this first round of TMDL pollution reduction targets and the first clarity restoration target shows that the Tahoe Partnership is strong and working," said Joanne S. Marchetta, TRPA executive director.

"Achieving lake clarity and many other watershed goals will only be possible through continued partnership and collaboration."

# *Pikas*

*Continued from page 1*

reported in the modern era. Researchers said the extent of the die-off echoed "large-scale range collapses" that occurred after the last Ice Age.

From 2011 to 2016, lead researcher Joseph Stewart, a conservation biologist at the University of California, Santa Cruz, scoured that triangle of land looking for pikas. He found plenty of old pika scat and used carbon dating to show how long the animal had occupied the area, but all signs of living pikas had disappeared.

"We knew that historically they occupied habitat all through that area," Stewart said. "But the living animals were no longer there."

Stewart says the pikas died out first in the lower elevations and then in the higher reaches of the 165-square-kilometer area because of increasingly hot summer temperatures. Pikas are sensitive to the heat; they can only survive for an hour in temperatures that are above 75 degrees. When the daytime temperatures are too high, pikas can't get out and forage or die trying.

Although some pikas survive in other parts of the Sierra, Stewart predicts that their numbers will decline by 97 percent by 2050. Other studies have shown that the pika has disappeared from the Black Rock Range in Nevada and from Zion National Park.

And the American pika is not the only victim of climate change. Stewart noted that Belding's ground squirrel and the alpine chipmunk are also suffering in the heat. The pika has disappeared from 15 percent of its historical habitat, but the Belding's ground squirrel — which lives above 6,500 feet elevation between Lake Tahoe and Kings Canyon — is gone from 42 percent of its historic stomping grounds.

More troubling, Stewart says, is that many more species may be disappearing but wildlife managers are having trouble documenting the decline due to a lack of funds for monitoring.

"For these species that are vulnerable, we need baseline data on where they are now," he said. "It's totally feasible to develop that knowledge. We just need to put money toward the effort."

The news of Stewart's findings about the pika triggered a wave of media reports. Discover Magazine, the New York Times, and many local and regional newspapers reported his findings. Stewart was surprised — this was his third paper on the topic — but hopes the public interest will convince people to help reverse global warming.

"It's one thing to hear about polar bears suffering because of climate change, but when you hear about an animal that is much closer to you and that you have seen on hikes or trips into the mountains, it tends to resonate more," he said.

Stewart notes other studies that show climate-related local extinctions have already occurred in hundreds of species around the world. A recent study that surveyed 976 species from tropical to marine habitats found that nearly half have suffered local extinctions.

Stewart says one hope for slowing the loss of species is to use targeted gene flow, in which animals from warm-adapted populations of a species are translocated to populations that don't yet possess these genetic adaptations to withstand warmer climate conditions.

"But a far simpler and more economical solution than trying to save each species individually is to rein in and reverse climate change," he said.

## Climate change bringing other impacts

The extinction of pikas from the Mount Pluto area north of Lake Tahoe is just one of the effects of climate change on the region.

The Tahoe Environmental Research Center's annual State of the Lake Report calls climate change a "complex and overarching factor" for many changes occurring at Tahoe, including:

**Warmer air:** Over the last century, the average daily minimum temperature has gone up more than 4 degrees F and now rests at above freezing.

**More precipitation falling as rain instead of snow:** In 2015, for example, snowfall in Tahoe City was only 5.4 percent of the total precipitation — the lowest in history.

**Warmer water:** The average water temperature in recent years has climbed at a record rate. It's now 1.4 degrees F higher than in 1970, and in the last four years it's climbed 10 times faster than normal.

**More tree deaths and a higher risk of wildfire:** Drought, insect attacks, and disease are also contributing to an increasing number of dead and dying trees in the Tahoe Basin and the Sierra Nevada.

**Increased algal growth:** TERC says climate change is related to the growth of tiny algae that thrive in warmer conditions and reduce water clarity in the summer. Winter water clarity improved nearly 12 feet in 2016, however — an indication that stormwater improvement projects around the lake are helping.

# Groups collaborating on new shoreline plan

Photo: Tahoe Regional Planning Agency

*Kayakers approach the shoreline while paddling in Emerald Bay.*

## *TRPA taps lakefront property owners, scientists to address sensitive area*

**By Tom Lotshaw**
Tahoe Regional Planning Agency

A new plan for Lake Tahoe's shoreline is being developed through a collaborative process that includes the public, TRPA, and more than a dozen public, private, and nonprofit partners.

Tahoe's shoreline has been a difficult area for planning.

Disagreements and lawsuits have derailed all past work to update regulations for the piers, buoys, boat ramps, and marinas people use to access the lake.

However difficult, the shoreline is an important planning area for Tahoe.

"It's where people go to enjoy Lake Tahoe's famously cold, clear water, and a delicate area where recreation access has to be balanced with appropriate protections for the shoreline's environment and scenic beauty," said Joanne S. Marchetta, executive director of TRPA.

As this year showed, with the lake rising more than 7 feet from below Tahoe's natural rim to the capacity of the Tahoe City Dam, the shoreline is also an area increasingly affected by climate change, drought, and changing water levels.

TRPA launched the shoreline planning process in 2016 and is taking a collaborative approach.

The agency formed two groups to guide planning:

- A shoreline steering committee of environmental representatives, lakefront property owners, government agencies, and marina managers to identify important planning areas and potential policies.
- A joint fact-finding committee with scientists and technical experts to answer questions about scientific evidence, shoreline structures and activities, and how they impact Tahoe's environment.

TRPA also hired a nationally recognized mediation firm, Consensus Building Institute, to help the committees work together toward agreed-upon solutions for difficult shoreline planning issues.

The shoreline plan is focused on structures that support boating and nonmotorized watercraft access and does not represent a comprehensive recreation plan at this time.

The steering committee spent the past year working to engage the public and came up with broadly supported policies that can enhance recreation access, improve the environment, and protect the scenic beauty of Lake Tahoe's shoreline. It hosted public workshops, with hundreds of community members informed of shoreline planning and policy proposals.

This fall, steering committee members agreed on a proposed alternative for the shoreline plan. It is one of the alternatives now undergoing a draft environmental review expected to be released for another round of public review and comment in spring 2018.

"We believe that it is time we close the door on 35 years of moratoria and embark on a new era of lake-wide programs that will ultimately strengthen and protect our environment, while providing fair and reasonable access to the lake," said Jan Brisco, executive director of the Tahoe Lakefront Owners' Association.

An inventory of shoreline structures this summer found six boat ramps, 14 marinas, 762 piers, and 4,690 buoys in 86 buoy fields on the lake. Where and how new shoreline structures are allowed, and how their impacts are mitigated to protect the environment, is at the heart of the shoreline plan partners hope to see finalized next year.

The proposed alternative put forth by the steering committee would authorize up to 10 new public piers, two new public boat ramps, and 128 new private piers at the lake, taking a go-slow approach that would accept up to 12 pier applications every two years and prioritize pier projects that either serve multiple property owners or retire development potential along the shoreline. It would authorize up to 1,430 new buoys for marinas, public agencies, lakefront property owners, and homeowner associations.

The proposal also includes adaptation strategies for piers, buoys, and boat ramps to remain functional during lower lake levels, and would create a no-wake zone for all of Emerald Bay.

The other shoreline plan alternatives being studied this winter would allow varying levels of new shoreline structures at the lake compared to the proposed alternative. TRPA and planning partners are also looking for ways to improve enforcement of shoreline regulations, including the 600-foot, no-wake zone in place at Lake Tahoe, and streamline what is widely recognized as a difficult permitting system.

"We're very encouraged by this process and by the collective intention to produce a plan that is adaptable for the changing conditions at Tahoe," said Darcie Goodman Collins, executive director of the League to Save Lake Tahoe. "Our biggest concerns remain that we develop a plan that is enforceable and that makes it easy for people to do the right thing. We're optimistic we can get there, and we will remain engaged to help make sure we do."

### Shoreline planning process

Learn about the shoreline planning process and policy proposals: shorelineplan.org

- Sign up for email alerts about upcoming meetings
- Comment on proposals and ask questions
- Share your thoughts and ideas
- Request a community presentation about the shoreline plan

### Shoreline steering committee

- Tahoe Regional Planning Agency
- Tahoe Lakefront Owners' Association
- League to Save Lake Tahoe
- Lake Tahoe Marina Association
- Lahontan Regional Water Quality Control Board
- California State Lands Commission
- Nevada Division of State Lands

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## This issue's winner

Congratulations to:
*John W. McHenry from Chula Vista, Calif..*

# Subscribers enjoy educational boat tour with TRPA staff

Photos: Tom Lotshaw, Tahoe Regional Planning Agency

*Readers learn about aquatic invasive species, wildfire, and forest health*

In August, the winners of our new-subscriber drawing were treated to an educational boat tour around Lake Tahoe. The winners, Linda and Rich Keefer and a few of their friends, were taken to various locations around the lake. On the boat tour with TRPA staff, they learned about aquatic invasive species such as Asian clams and Eurasian watermilfoil eradication in Emerald Bay, how agencies around the lake are working to reduce wildfire risk and improve forest health, and how the 2012 Regional Plan and Lake Tahoe Environmental Improvement Program are working to conserve and restore the lake's environment and revitalize its communities.

"We would like to express a heartfelt thank you for the wonderful August tour of our beautiful lake," Linda Keefer said. "Dennis Zabaglo and crew were so informative and obviously love what they do. We feel so fortunate to have won this memorable prize. Thanks again and keep up the good work."

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# The basin's best

## *TRPA honors 15 projects with environmental benefits*

**By Tom Lotshaw**
Tahoe Regional Planning Agency

In September, TRPA recognized 15 projects completed in 2016 with Best in Basin awards. The projects restored streams and wetlands, cleaned up contaminated properties, built bike trails, improved forest health, reduced stormwater pollution, and revitalized communities.

Now in its 27th year, TRPA's Best in Basin awards program showcases projects that demonstrate exceptional planning, implementation, and compatibility with Lake Tahoe's environment and communities.

Here's a rundown of this year's award-winning projects:

**1. Kingsbury Stinger Trail:** The U.S. Forest Service and Tahoe Area Mountain Biking Association realigned and overhauled a steep, heavily eroding trail, creating a multi-use trail that runs from the Andria Drive trailhead at the top of Kingsbury to the Tahoe Rim Trail and ends at Terrace View Street in lower Kingsbury, connecting with a Class 1 bike path there.

**2. Burke Creek Highway 50 Crossing and Realignment, Phase 1:** Nevada Tahoe Conservation District daylighted a stretch of Burke Creek in Stateline that was in an underground culvert, creating 200 feet of new stream channel and functioning floodplains.

**3. Edgewood Lodge and Golf Course Improvement Project:** Edgewood improved its golf course water features, which capture stormwater from the casino core and are a final treatment area before they discharge into Edgewood Creek.

**4. Tahoe Mountain Lab:** Cristi and Bernard Creegan and Jamie and David Orr overhauled the Tahoe Daily Tribune building in South Lake Tahoe, creating a new co-working space for entrepreneurs and startup businesses and a community gathering place.

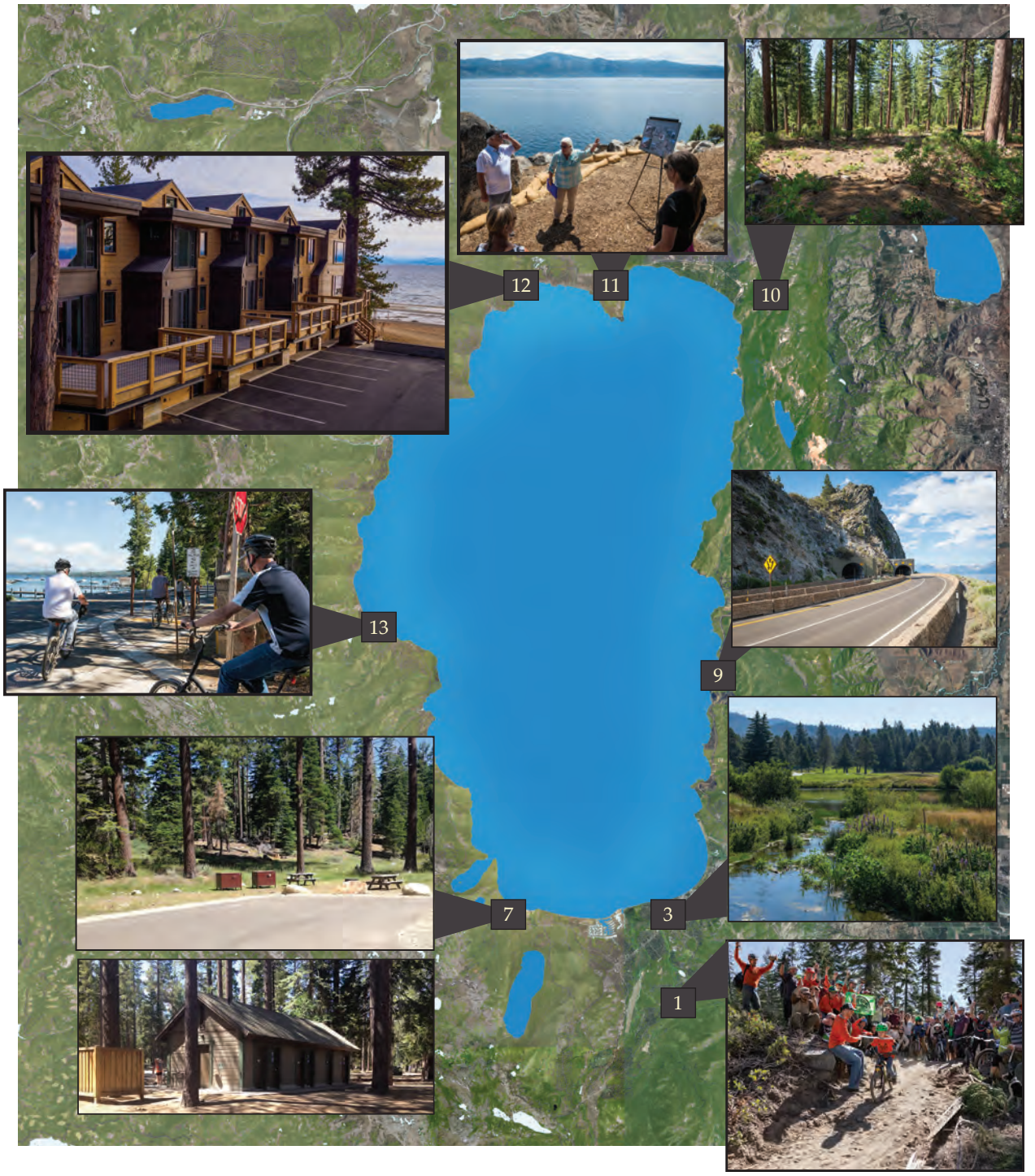
**5. Sierra Tract Erosion Control Project, Phases 3-4:** City of South Lake Tahoe upgraded several hundred acres of the Sierra Tract neighborhood to reduce nuisance flooding and stormwater pollution into the Upper Truckee River.

**6. Lake Tahoe Unified School District Energy Upgrades:** With the help of a state grant, the district installed building automation systems, upgraded 7,287 lights to more efficient LED lighting, installed a high-efficiency HVAC system at the district office, smart irrigation systems districtwide, and high-efficiency windows at the middle school.

**7. Camp Richardson BMP Retrofit:** The U.S. Forest Service and Camp Richardson Resort Inc. upgraded the popular tent and RV campgrounds with paved roads and parking areas to reduce dust, best management practices to reduce stormwater pollution, new restrooms and a check-in kiosk, and bear-proof food lockers at campsites.

**8. Lake Valley Wood Roof Replacement Program:** Lake Valley Fire Protection District secured a federal grant to help nearly 400 homeowners replace dangerous wood-shake roofs with noncombustible roofing materials and create defensible space.

**9. Cave Rock Tunnel Extension:** Nevada Department of Transportation built a tunnel extension carefully blended into Cave Rock to protect people from falling rocks. The project included measures to reduce stormwater pollution along four miles of Highway 50.




**10. Northwood Boulevard Fuel Reduction:** Property owner James Hite, North Lake Tahoe Fire Protection District, and Healthy Trees, Inc. partnered to thin 15 acres of overgrown forest in Incline Village.

**11. Somers Loop Water Quality Improvement:** Nevada Pacific Development Corporation, David and Cheryl Duffield, and a team of partners restored a 6.4-acre lakefront site in Crystal Bay. Working in steep and rugged terrain, the project removed seven dilapidated structures, five abandoned septic systems, 20 drums of hazardous household waste, and 540 cubic yards of contaminated soil and rock.

**12. Tahoe Beachfront Residences:** Todd Davidson and partners razed an old, lakefront hotel in Kings Beach to build this residential project, marking the first significant private investment after the Kings Beach Commercial Core Improvement Project.

**13. Homewood Bike and Pedestrian Trail:** Tahoe City Public Utility District and partners completed this 1-mile "missing link" in the West Shore Bike Trail, which runs from Tahoe City to Sugar Pine State Park. The trail runs between Cherry and Fern streets in Homewood.

**14. Lake Tahoe Info Website:** Launched by TRPA and partners in the Environmental Improvement Program (EIP), the Lake Tahoe Info website is a clearinghouse for information on all EIP projects, which entities funded them, when, and where they were completed, and what they accomplished.

**15. Silliman Slope Stabilization:** Property owners stabilized 145 feet of eroding slope between Fallen Leaf Lake Road and Fallen Leaf Lake with rip-rap, boulders, and vegetation to stop the erosion and improve public safety.